History 417: Perspectives on Silicon Valley
Spring 2013

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Office hours: by appointment

Grading:	Participation:	25%
	Weekly discussion papers:	25%
	Mid-term:	25%
	Final paper:	25%

Participation: If you attend class, contribute to discussion, and demonstrate a working knowledge of the readings you will get full participation credit. I realize that you may occasionally have to miss class or that you may feel uncomfortable speaking up in discussion. If so, please talk to me about ways to fulfill the participation credit (e.g. short thought papers on the readings). However, it will be easiest for you (and me) if you come to every class, ready to share your ideas and enthusiasm. [But please be courteous and keep in mind that everyone else is in the same boat – a good class discussion is a group effort that raises everyone's participation score, and *not* the result of one or two students trying to take charge.]

IMPORTANT ELEMENT OF PARTICIPATION GRADE

Each week there will be a few "optional readings" listed in the syllabus. You will choose a chapter-length (i.e., about 30 pages) chunk of optional reading each week (either from the "optional readings" listed below or a reading of your own suggestion) and come to class prepared to summarize the content and argument of that reading for your peers. This will allow us to cover considerably more material than we could ordinarily, and it will give you some freedom to pursue topics that are more to your liking.

Weekly papers: I would like you to hand in a one-page discussion paper each week. This should not take you a lot of time to write – I won't grade on prose or coherence of argument. Instead, concentrate on raising questions for us to discuss in class, and on asking me questions about background material that you need to understand the readings better. These are due two hours before class each week. Readings and discussion papers are assigned (and can be returned) via Owl-Space. PLEASE CHECK THE COURSE'S OWL-SPACE SITE REGULARLY.

Midterm: There will be a take-home midterm exam handed out on February 18th and due back at the beginning of class on March 4th. This will be worth 25% of your total grade.

Final paper: The history of Silicon Valley is too sprawling a topic to cover adequately in one semester. There will be many interesting topics that we will not be able to cover in-depth (or even at all) in class. To try to ensure that the course covers at least some of

these neglected themes, therefore, I am assigning a term paper in lieu of a final exam. This paper will be due, in my office (or by email or Owl-Space), at 5:00 p.m. on the day that a final exam for this course would be held.

Note: any student with a documented disability needing academic adjustment or accommodations is requested to speak with me during the first two weeks of class. All discussions will remain confidential. Students with disabilities should also contact Disabled Student Services in the Ley Student Center.

Learning outcomes: By the end of this course, you should be able to articulate what Silicon Valley is, some factors that account for its success, some common myths concerning Silicon Valley (and the purposes, origins, and contradictions of those myths), and some reasons Silicon Valley is and is not comparable to previous industrial districts (and some reasons it should or should not serve as a model for future industrial districts). I fully expect that substantive content to disappear quickly from your consciousness after you graduate, but the more important outcome of this course is that you will be a more informed citizen when thinking about issues such as: the nature of university-industry relations; the role of government investment in high technology; the politics of promoting the interests of the "creative class" in urban and suburban development; the functional and dysfunctional contributions of hype and futurism in creating and sustaining high-tech industries; etc.

In addition, my hope is that you will pick up some practical skills from this course. In particular, you will (A) have to give weekly summaries of a reading to your classmates, which will require you to analyze a complex narrative and argument, condense it, and then present it to your peers; and you will (B) write a research paper using primary and secondary sources, which you will weave into an original argument. Both A and B are skills that, in modified form, you will likely draw on again (perhaps even on a daily basis) in your post-Rice career.

Plagiarism and the Honor Code: Every assignment in this course is covered by Rice's Honor Code. I won't ask you to check off the Honor Code box on your weekly response papers, but you are still required to abide by it. That means that you **must** adhere to standard US academic practice when it comes to originality of work and citation of sources. **Any** time you quote from a source, you must cite that source and you must indicate that you are quoting rather than paraphrasing. Any time you paraphrase a source, you must acknowledge it. If you rely on an idea borrowed from someone else, you should indicate that. I am not a stickler for any particular citation style, but whatever style you choose should be (A) consistent and (B) clear enough that your reader can track down your source and verify it.

Week of 1/7: Regions and high technology

Optional

Timothy J. Sturgeon, "What Really Goes on in Silicon Valley? Spatial Clustering and Dispersal in Modular Production Networks," *Journal of Economic Geography* 3 (2003): 199-225.

Steven Klepper, "The Origin and Growth of Industry Clusters: The Making of Silicon Valley and Detroit," *Journal of Urban Economics* 67 (2010): 15-32.

Week of 1/14: The Valley of the Heart's Delight

Cecilia Tsu, "'Independent of the Unskilled Chinaman': Race, Labor, and Family Farming in California's Santa Clara Valley," *Western Historical Quarterly* 37 (Winter 2006): 475-495.

Gabriella M. Petrick, "'Like Ribbons of Green and Gold': Industrializing Lettuce and the Quest for Quality in the Salinas Valley, 1920-1965," *Agricultural History* 80.3 (2006): 269-295.

Timothy J. Sturgeon, "How Silicon Valley Came to Be," in *Understanding Silicon Valley: The Anatomy of an Entrepreneurial Region*, ed. Martin Kenney (Stanford: Stanford University Press): 15-47.

Additional readings:
John Steinbeck, *Of Mice and Men*
Claude Fischer, *America Calling*, Chapters 5-7
Glenna Matthews, *Silicon Valley, Women, and the California Dream*, Chapters 1-3
Stephen J. Pitti, *The Devil in Silicon Valley: Northern California, Race, and Mexican Americans*, Chapters 1-5

Week of 1/28: Stanford and the original garage start-ups

Stuart W. Leslie, "The Biggest 'Angel' of Them All: The Military and the Making of Silicon Valley," in *Understanding Silicon Valley: The Anatomy of an Entrepreneurial Region*, ed. Martin Kenney (Stanford: Stanford University Press): 48-67.

Christophe Lécuyer, "Chapter 3: Military Cooperative," in *Making Silicon Valley: Innovation and the Growth of High Tech, 1930-1970* (Cambridge, Mass.: MIT Press, 2006): 91-128.

Margaret Pugh O'Mara, "Chapter 3: From the Farm to the Valley: Stanford University and the San Francisco Peninsula," in *Cities of Knowledge: Cold War Science and the Search for the Next Silicon Valley* (Princeton: Princeton University Press, 2005): 97-141.

Additional readings:
Rebecca S. Lowen, *Creating the Cold War University: The Transformation of Stanford*, Chapters 1-7
Eric Vettel, *Biotech: The Countercultural Origins of an Industry*, Chapters 1-4
Christophe Lécuyer, *Making Silicon Valley*, Chapters 1 and 2
Glenna Matthews, *Silicon Valley, Women, and the California Dream*, Chapter 4
Stuart W. Leslie, *The Cold War and American Science: The Military-Industrial Academic Complex at MIT and Stanford*, even chapters

Week of 2/4: Semiconductors and the early Cold War

Michael Riordan and Lillian Hoddeson, "Chapter 11: California Dreaming," in *Crystal Fire: The Invention of the Transistor and the Birth of the Information Age* (New York: Norton, 1997): 225-253.

Daniel Holbrook *et al.*, "The Nature, Sources, and Consequences of Firm Differences in the Early History of the Semiconductor Industry," *Strategic Management Journal* 21 (2000): 1017-1041.

Thomas Heinrich, "Cold War Armory: Military Contracting in Silicon Valley," *Enterprise & Society* 3 (2002): 247-284.

Additional readings:
Christophe Lécuyer, *Making Silicon Valley*, Chapter 4
Christophe Lécuyer and David C. Brock, *Makers of the Microchip*, Chapter 1
Michael Riordan and Lillian Hoddeson, *Crystal Fire*, Chapters 7-10 and 12
Leslie Berlin, *The Man behind the Microchip*, Chapters 3-5
Joel Shurkin, *Broken Genius: The Rise and Fall of William Shockley*, Chapter 9

Week of 2/11: Civilianization and outsourcing

Christophe Lécuyer, "Silicon for Industry: Component Design, Mass Production, and the Move to Commercial Markets at Fairchild Semiconductor, 1960-1967," *History and Technology* 16 (1999): 179-216.

Christophe Lécuyer, "What Do Universities Really Owe Industry? The Case of Solid State Electronics at Stanford," *Minerva* 43 (2005): 51-71.

Timothy Lenoir and Christophe Lécuyer, "Instrument Makers and Discipline Builders: The Case of NMR," *Perspectives on Science* 4 (1995): 97-165.

Additional readings:
Christophe Lécuyer, *Making Silicon Valley*, Chapters 5-7
Leslie Berlin, *The Man behind the Microchip*, Chapters 6-10
Ross Knox Bassett, *To the Digital Age*, Chapters 4, 6, 8

Week of 2/18: High tech and the Bay Area counterculture

!!!MID-TERM HANDED OUT!!!

Trevor Pinch and Frank Trocco, "Chapter 2: Buchla's Box," and "Chapter 5: Haight-Ashbury's Psychedelic Sounds," in *Analog Days: The Invention and Impact of the Moog Synthesizer* (Cambridge, MA: Harvard University Press, 2002): 32-52 and 89-106.

Andrew Kirk, "Appropriating Technology: Alternative Technology, The Whole Earth Catalog and Counterculture Environmental Politics," *Environmental History* 6.3 (2001): 374-394.

Cyrus C.M. Mody and Andrew J. Nelson, "'A Towering Virtue of Necessity:' Computer Music at Vietnam-Era Stanford," *Osiris* (forthcoming; available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2130855).

Additional readings:
Eric Vettel, *Biotech: The Countercultural Origins of an Industry*, Chapter 5
Rebecca S. Lowen, *Creating the Cold War University: The Transformation of Stanford*, Chapter 8
Stuart W. Leslie, *The Cold War and American Science: The Military-Industrial Academic Complex at MIT and Stanford*, Chapter 9
David Kaiser, *How the Hippies Saved Physics*, Chapters 3-5, 7-8
Walter Isaacson, *Steve Jobs*, Chapters 1-3
Joel Shurkin, *Broken Genius: The Rise and Fall of William Shockley*, Chapters 10-14

Week of 3/4: Biotechnology

!!!MID-TERM DUE BACK BEGINNING OF CLASS!!!

We will watch *Protein Synthesis: An Epic on the Cellular Level* (1971)

Eric J. Vettel, "The Protean Nature of Stanford University's Biological Sciences, 1946-1972," *Historical Studies in the Physical and Biological Sciences* 35.1 (2004): 95-113.

Sally Smith-Hughes, "Making Dollars out of DNA: The First Major Patent in Biotechnology and the Commercialization of Molecular Biology, 1974-1980," *Isis* 92 (2001): 541-575.

Joseph Cortright and Heike Mayer, *Signs of Life: The Growth of Biotechnology Centers in the U.S.* (Washington, DC: Brookings Institution Center on Urban and Metropolitan Policy, 2002).

Additional readings:
Eric Vettel, *Biotech: The Countercultural Origins of an Industry*, Chapters 7-8
Sally Smith Hughes, *Genentech*, Chapters 1-6
Paul Rabinow, *Making PCR*, Chapters 1-5
Swanson, Kara (2007) "Biotech in Court: A Legal Lesson on the Unity of Science," *Social Studies of Science* 37.3: 357-384.
Joseph November, *Biomedical Computing*, Chapter 5

Week of 3/11: Silicon Valley in national context

Stuart W. Leslie & Robert H. Kargon (1996) "Selling Silicon Valley: Frederick Terman's Model for Regional Advantage," *Business History Review* 70.4: 435-472.

Margaret Pugh O'Mara, "Chapter 5: Selling the New South: Georgia Tech and Atlanta," in *Cities of Knowledge: Cold War Science and the Search for the Next Silicon Valley* (Princeton: Princeton University Press, 2005): 182-220.

Stuart W. Leslie (2001) "Regional Disadvantage: Replicating Silicon Valley in New York's Capital Region," *Technology and Culture* 42.2: 236-264.

Additional readings:
Leslie Berlin, *The Man behind the Microchip*, Chapters 11-12
Margaret Pugh O'Mara, *Cities of Knowledge*, Chapter 4
Anna-Lee Saxenian, "In Search of Power: The Organization of Business Interests in Silicon Valley and Route 128," *Economy and Society* 18.1 (1988): 25-70.
Manuel Castells and Peter Hall, *Technopoles of the World*, Chapters 2-3
Robert Kargon and Stuart W. Leslie, "Imagined Geographies: Princeton, Stanford, and the Boundaries of Useful Knowledge in Postwar America," *Minerva* 32 (1994): 121-143.

Week of 3/18: Silicon Valley in international context

AnnaLee Saxenian, "The Silicon Valley-Hsinchu Connection: Technical Communities and Industrial Upgrading," *Industrial and Corporate Change* 10.4 (2001): 893-920.

Kim Dong-Won and Stuart W. Leslie, "Winning Markets or Winning Nobel Prizes? KAIST and the Challenges of Late Industrialization," *Osiris* 13 (1998): 154-185.

Manuel Castells and Peter Hall, "Chapter 6: Japan's Technopolis Program," in *Technopoles of the World: The Making of 21st Century Industrial Complexes* (London: Routledge, 1994): 112-143.

Additional readings:
AnnaLee Saxenian, *The New Argonauts*, Chapters 2-8
Manuel Castells and Peter Hall, *Technopoles of the World*, Chapters 4-5, 7-8
Maureen McKelvey, *Evolutionary Innovations*, Chapters 5-7

Glenna Matthews, *Silicon Valley, Women, and the California Dream*, Chapter 5
Walter Isaacson, *Steve Jobs*, Chapter 4

Week of 3/25: Labor, environmental, and quality of life issues

AnnaLee Saxenian, "The Urban Contradictions of Silicon Valley," *International Journal of Urban and Regional Research* 7 (1983): 237-262.

Joseph LaDou and Timothy Rohm, "The International Electronics Industry," *International Journal of Occupational and Environmental Health* 1 (1998): 1-18.

Jan Mazurek, "Chapter 2: Hitting a Moving Target," in *Making Microchips: Policy, Globalization, and Economic Restructuring in the Semiconductor Industry* (Cambridge, Mass.: MIT Press, 1999): 47-88. [available as e-book from Fondren]

Additional readings:
Glenna Matthews, *Silicon Valley, Women, and the California Dream*, Chapter 6
Stephen J. Pitti, *The Devil in Silicon Valley: Northern California, Race, and Mexican Americans*, Chapters 6-8
Gina Neff, *Venture Labor*
Steven McKay, *Satanic Mills or Silicon Islands?*

Week of 4/1: Computing

Thierry Bardini, "Chapter 6: The Arrival of the Real User and the Beginning of the End," in *Bootstrapping: Douglas Engelbart, Coevolution, and the Origins of Personal Computing* (Stanford: Stanford University Press, 2000): 143-181.

Walter Isaacson, Chapters 5, 6, and 8, in *Steve Jobs* (New York: Simon and Schuster, 2011): 56-85 and 92-101.

Alfred D. Chandler, "Chapter 5: The Microprocessor Revolution," in *Inventing the Electronic Century* (Cambridge: Harvard, 2005): 132-176

Additional readings:
Thierry Bardini, *Bootstrapping*, Chapter 5
Walter Isaacson, *Steve Jobs*, Chapters 9-18
AnnaLee Saxenian, "The Origins and Dynamics of Production Networks in Silicon Valley," in *Understanding Silicon Valley*, ed. Martin Kenney (Stanford: Stanford, 2000): 141-162

Week of 4/8: Hackers, futurists, and techno-libertarians

Thierry Bardini, "Chapter 7: 'Of Mice and Men': ARPANET, E-mail, and est," in *Bootstrapping: Douglas Engelbart, Coevolution, and the Origins of Personal Computing* (Stanford: Stanford University Press, 2000):182-214.

Fred Turner, "Where the Counterculture Met the New Economy: The WELL and the Origins of Virtual Community," *Technology and Culture* 46 (2005): 485-512.

W. Patrick McCray, "Of Futures and Fringes: California's Technological Enthusiasts," in *Where Minds and Matter Meet: Technology in California and the West*, ed. Volker Janssen (Huntington-USC Institute on California and the West by University of California Press and the Huntington Library, San Marino, California, 2012): ??-??.

Additional readings:
Lonny J. Brooks and Geoffrey Bowker, "Playing at Work: Understanding the Future of Work Practices at the Institute for the Future," *Information, Communication & Society* 5 (2002): 109-136.
Fred Turner, *From Counterculture to Cyberculture*, Chapters 4-5
W. Patrick McCray, *The Visioneers*, Chapters 6-8

Week of 4/15: Silicon Valley and the New Economy

Martin Kenney and Richard Florida, "Venture Capital in Silicon Valley," in *Understanding Silicon Valley*, ed. Martin Kenney (Stanford: Stanford, 2000): 98-123

Stephen S. Cohen and Gary Fields, "Social Capital and Capital Gains," in *Understanding Silicon Valley*, ed. Martin Kenney (Stanford: Stanford, 2000): 165-189

Matthew A. Zook, Chapters 7 and 8, in *The Geography of the Internet Industry* (Malden, Mass.: Blackwell, 2005): 96-132.

Additional readings:
Fred Turner, *From Counterculture to Cyberculture*, Chapters 6-8
Walter Isaacson, *Steve Jobs*, Chapters 22-40
Monica Rao Biradavolu, *Indian Entrepreneurs in Silicon Valley*